

explained by a mere reference to the great range of specific variability which, as we now know, obtains in the Comatulidæ. What may be ignorance or prejudice on the part of a naturalist is, if it be possible, to be kept out of the systematic register; and I content myself therefore with expressing an opinion without letting it appear in the technical title of the species.

A case of this kind forces on one's mind a reconsideration of the doctrines of a polyphyletic and a monophyletic origin of species, and, as Semper¹ has distinctly shown, of the further question of the difference between the real or objective, as opposed to the systematic or subjective view of what constitutes a species—a difference, which may perhaps be put in other words, as that which obtains between a Linnean and a genetic conception of specific relationship. That the *Antedon eschrichti* of Greenland and the *A. eschrichti*, var. *magellanica*, ever had a common ancestor belonging to the species *A. eschrichti* seems to me barely credible. All, at any rate, that I mean in now placing the Magellan form in the same species as *A. eschrichti* is that, looking to those structural characters by which naturalists distinguish species from one another, I cannot find enough to justify me in forming a "new species." But I would not like to be thought to have failed to recognize that in the discrimination of the homogenetic and the homoplastic factors of species, we have at present no criterion other than what even a friendly critic might call our ignorance. Chorology and Palæontology will have to do for species what Comparison and Embryology are doing for organs.

6. Notes on the Natural History of Franz-Josef Land as observed in 1881–82. By W. H. NEALE, M.B., Medical Officer of the 'Eira' Expedition. (Communicated by Prof. NEWTON.)

[Received October 25, 1882.]

On July 25th, 1881, the 'Eira' expedition reached Gray Bay, Franz-Josef Land. At Cape Crowther and Cape Grant there are large loomerics; a short distance up the bay, on the west side, many Rotges had their young among the basaltic columns of the lofty cliffs. On the east side, near the head of Gray Bay, there were a good number of Snow-birds and Dovekies building, but too high for any one to climb and obtain the eggs.

At Cape Stephen there was a large loomery; and at Cape Forbes there were a few Looms, a good number of Rotges and Dovekies, and some Snow-birds.

At Bell Island the same species were also seen; and on the south side there was a large loomery, and a great number of Kittiwakes' nests, also Dovekies, Rotges, Snow-birds, and Burgomasters. Rain-

¹ 'Animal Life,' p. 462.

Geese and Brent Geese were seen and shot on the cliffs 700 feet above sea-level; but no nests were seen.

At Cape Flora there was a very large loomery, also many Dovekies, Rotges, Kittiwakes, Snow-birds, and Burgomasters. On the lowland Snow-Buntings and Sanderlings were seen, but no nests were found.

The Looms lay their eggs on the bare rocks. The Dovekies and Rotges lay them in the crevices of the rocks. The Kittiwake makes a nest of mud and moss. The Snow-bird makes a rudimentary nest of moss and a few feathers; but it is of no definite shape. Each species seems to occupy a separate part of the cliff; the Kittiwakes generally build with the Looms, but always on the lowest shelves.

The Rotges and Dovekies left about the first week in September; Looms were very scarce after September 10th. On September 22nd a note in my diary says that a few Burgomasters, Snow-birds, Mollies, Kittiwakes, Eider Ducks, Brent Geese, Snow-Buntings were still seen, but getting very scarce, and that by the end of the month a bird was a sight seen only very rarely. On October 13th two or three young Snow-birds and occasionally a Molly or Burgomaster were still seen hovering around the meat outside the house; and even on October 28th a few Snow-birds, Mollies, and Burgomasters came and fed on the remains of a Walrus, and remained a day or two hovering about; but after November 1st I never saw a bird at all.

On February 8th, 1882, a Snowy Owl was seen; the first bird to arrive. On February 18th two or three flocks of Dovekies were seen flying to the N.W.; and on the 20th we saw a great number in the water.

On March 2nd a lane of water opened out, close to the ground-ice; and it was crowded with Rotges and Dovekies. March 9th, the first Loom was seen; but it was not until nearly the end of March that they began to settle on the rocks; and then they would only stop for a few hours, and go away for four or five days. We were not able to get up the cliff and shoot any until April 16th.

April 20th, a Snow-bird was seen, also a Falcon Hawk. April 22nd, two Burgomasters were seen. April 24th, Mollies were seen. May 6th was the first time Kittiwakes were noticed; and the small land-birds were seen about that time.

The Looms did not begin to sit on the cliffs until about June 10th; after that date the females remained almost always on the rocks, keeping their places, ready for laying; and on June 20th three Loom's eggs were obtained; no other eggs were seen or obtained. Although a great many Geese used to come on the lowland near the pond, I never could find any signs of a nest.

The following is a list of the birds seen on the land either in 1881 or 1882:—

Loom (*Uria brunnicchi*).

Rotge (*Mergulus alle*).

Dovekie (*Uria grylle*).

Molly (*Procellaria glacialis*).

Snow-bird (*Pagophila eburnea*).

Burgomaster (*Larus glaucus*).

Kittiwake (*Rissa tridactyla*).
 Boatswain (Pomatorhine Skua) (*Lestris* sp. inc.).
 Arctic Tern (*Sterna hirundo*).
 Eider Duck (*Somateria mollissima*).
 Brent Goose (*Bernicla brenta*).
 Rain-Goose (*Colymbus septentrionalis*).
 Snow-Bunting (*Plectrophanes nivalis*).
 Snowy Owl (*Nyctea scandiaca*).
 Sanderling (*Calidris arenaria*).
 Snipe (*Gallinago* sp. inc.).
 Redpole (*Linota* sp. inc.).

These two species I cannot be certain about; no specimen was obtained; but some of the old whaling hands called certain birds on the land by these names.

Falcon (*Falco candicans*).

We were very fortunate in getting a good number of Bears (*Ursus maritimus*). During the winter months we saw, as a rule, two a week, except in December, when we only saw one or two, and did not manage to shoot any. Bears were constantly prowling about the edge of the ground-ice, and if they got scent of the house, would walk right up to the porch if they did not see any one.

From September to June we shot 34 Bears: the greater number of them were males; and some were very large; one measured 11 feet from the root of the tail to the nose. Female Bears were never obtained during the dark days. On examining the contents of the stomach, we often found nothing but grass; in the spring, however, they generally had been feeding on seals, and more than once we obtained a good bucketful of oil for cooking-purposes out of a Bear's stomach. Once a Bear had eaten a large piece of canvas which had been blown some distance from the house; he then came up and commenced to eat our blubber, but was soon shot.

On February 20th a Bear was seen about 400 feet up the hill at the back of our hut; some hands went up with a rifle, but could not get a shot, as the Bear retired into its hole, and refused to come out. For some days the Bear remained up the hill, and was seen at times out of its hole. March 1st was the last time it was noticed; and a day or two after the footmarks of an old Bear and a cub were seen on the lowland some 300 yards to the eastward of the hut, but could not be traced up the hill towards the hole.

We never saw a cub during 1882; but in August 1881 we caught a cub about as large as an ordinary retriever, and had it in a cask when the ship was lost.

The following is a copy of our

Game List.

September 1881.....	{	6 Bears.
		16 Walrus.
		1660 Looms.
October ,,	{	5 Bears.
		5 Walrus.

November	1881.....	2 Bears.
December	„	
January	1882.....	{ 4 Bears.
		{ 3 Walrus.
February	„	1 Bear.
March	„	8 Bears.
April	„	{ 4 Bears.
		{ 50 Looms.
May	„	{ 3 Bears.
		{ 370 Looms.
		{ 1 Bear.
June	„	{ 5 Walrus.
		{ 250 Looms.
July	„ (During boat-journey.)	2 Bears.

On nearing Cape Crowther in July 1881, Walruses were seen on loose pieces of ice in great numbers; sometimes twenty or more were counted lying huddled up on one small piece. By going quietly in a boat you could get within 20 or 30 yards of them before they took much notice of you; but after the first shot was fired they tumbled into the water, and would go swimming about and barking round the boat, but never attacked us.

In September we saw great numbers of Walruses on the loose ice near the land; near Bell Island they were in great quantities; and off Cape Flora they were in great schools in the water. On October 28th five Walruses were shot on the edge of the ground-ice in front of our hut; there were also great numbers in the water at that time of the year. Up to the end of February Walruses were constantly seen swimming about in the water; and on January 24th three were shot at the edge of the ground-ice near the hut. In March the land-floe formed, and no open water existed within 7 or 8 miles of the land; but on going up the hill, Walruses could be seen by means of a glass swimming in the water.

On June 13th a strong N.W. gale broke up the land-floe; and on June 15th five Walruses were shot on the loose ice in the Sound.

The Walruses never left the country; and we never saw any signs of their taking the land. No remains of bones were seen anywhere on the land.

White Whales and Narwhals were seen in great numbers in September and October travelling S.E.; and in June some large schools were seen travelling westward and north-west.

Foxes (*Canis lagopus*) were constantly troubling us during the winter; they would come close up to the house, and soon got so tame that it was difficult to frighten them away from our blubber. We shot one White Fox (female) and a Grey Fox (male) during the winter. One or two Grey Foxes were seen during the winter with patches of white on them. No Black Fox was seen. In the autumn the Foxes were very quick in catching the Looms, especially the young ones, when they were first brought down to the water. Two or

three Foxes would keep near the edge of a hole of water and kill the Looms; they would then carry them up a few hundred yards on the land, where they were relieved by other Foxes, who carried them up some distance, and then deposited them, for others to carry them to some place in the cliff; but we could never manage to find out their storehouse.

7. On the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions, 1868-70. (Part V.¹) By J. GWYN JEFFREYS, LL.D., F.R.S., F.Z.S.

[Received November 1, 1882.]

(Plates XLIX., L)

Since the publication of the last part of this memoir I have, through the kindness of several eminent palæontologists in Italy, had an opportunity of examining their rich collections of Subapennine and Sicilian Tertiary shells, and of carefully comparing them with their living analogues. This kind of study is indispensable to all zoologists in every department; and it teaches us at least two important facts, viz., 1st, the exact concordance in the most minute particulars of so many species in their fossil and recent state, notwithstanding the lapse of the enormous and incalculable time which has intervened; and 2nd, the extensive changes which have taken place during the same period between the depth of the ocean and the height of land in the North-Atlantic area. The latter fact has been demonstrated in a short paper which I contributed to the Geological Society in 1880, "On the Occurrence of Marine Shells of existing Species at different heights above the present Level of the Sea," and which has reference to the present work.

The Expedition made this summer in the French vessel 'Le Travailleur' for exploring the depths of the Lusitanian seas for a third time, as well as of the seas lying between Cadiz, the Canaries, Madeira, and the Azores, has been most successful and productive; and I have been indebted to the obliging favour of my friend Dr. Paul Fischer, for the opportunity of examining the interesting Mollusca which were thus procured. The complete investigation of the Mollusca in even this comparatively limited area must be inexhaustible. What shall we say then to the investigation of all the various and hitherto unknown fauna which inhabit the depths of every ocean throughout the whole world!

I will now continue my account of the Mollusca from the 'Lightning' and 'Porcupine' Expeditions.

Class SOLENOCONCHIA.

Family DENTALIIDÆ.

✓ 1. DENTALIUM DENTALIS, Linné.

D. dentalis, L. S. N. p. 1263; G. B. Sowerby, Thes. Conch. pl. cccxiv. f. 24, 27.

¹ For Part I. see P. Z. S. 1878, p. 393; for Part II. see P. Z. S. 1879, p. 553; for Part III. see P. Z. S. 1881, p. 693; and for Part IV. see P. Z. S. 1881, p. 922.